



Persimmon (lat. *Diōspyros*)

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Abstract. The article discusses the main properties of persimmon and its effect on the human body. A systematic review of modern specialized literature and relevant scientific data was carried out. The chemical composition and nutritional value of the fruit are indicated, the use of persimmon in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of persimmon on the human body under certain medical conditions and diseases are analyzed separately. The scientific foundations of diets with its application are considered.

Key words: persimmon, benefit, harm, beneficial properties, contraindications

Beneficial features

Table 1. Chemical composition of oriental persimmon (according to [Food+ data](#)).

Main substances (g/100 g):	Persimmon oriental [1]	Dried oriental persimmon [2]
Water	80.32	23.01
Carbohydrates	18.59	73.43
Sugar	12.53	
Squirrels	0.58	1.38
Alimentary fiber	3.6	14.5
Fats	0.19	0.59
Calories (kcal)	70	274
Minerals (mg/100 g):		
Potassium	161	25
Phosphorus	17	81
Magnesium	9	31
Calcium	eight	802

Sodium	one	2
Manganese	0.355	0.42
Iron	0.15	0.74
Copper	0.113	0.442
Zinc	0.11	1.39
Vitamins (mg/100 g):		
Vitamin C	7.5	0
Vitamin A	0.976	0.460
Vitamin E	0.73	
Vitamin B6	0.1	
Vitamin PP	0.1	0.18
Vitamin B1	0.03	
Vitamin B2	0.02	0.029

The table shows data on persimmon *orientalis* - the most common type on the shelves of our stores. However, belonging to a different type of product can significantly affect some of the indicators. Thus, the amount of sugar (glucose and fructose) in some varieties reaches 44%, but the range for this parameter is very wide (from 9.27%). In dried fruits, the upper limit of the range will rise even higher (up to 60-65%).

Vitamin C may be present in an amount of 0.41-0.92% by weight of the fruit. According to this parameter, for example, *virgin persimmon* with 66 mg / 100 g is noticeably ahead of *eastern persimmon* with its 7.5 mg / 100 g. In addition, virgin persimmon contains almost twice as much potassium (31 mg / 100 g) and iron (2.5 mg/100 g), 3.5 times more calcium (27 mg/100 g), 50% more phosphorus (26 mg/100 g) ^[3].

In addition, the fruits of any persimmon contain citric and malic organic acids, leucoanthocyanides (and in particular delphinidin both in soluble and insoluble forms), minerals, flavonoids, glycosides, protein, fats, 7-methylglon, tannin, the amount of which decreases with maturation and exposure to low temperatures (soluble tannins become insoluble). Oriental persimmon has a high iodine content (up to 50 mg%). But useful substances are found not only in berries. In the roots of the tree, naphthoquinones have been isolated, which also have numerous medicinal properties ^[4].

Medicinal properties

Scientists have isolated the substance 7-methylglon from persimmon, which exhibits anti-inflammatory properties, has an antipyretic effect, and can relieve pain ^[5,6]. Studies show that dimeric naphthoquinones and their derivatives have antitumor properties ^[7]. The same effect is exerted by the saponin lupeol and plant sterol sitosterol present in persimmons ^[8]. Like some other phytosterols, it also helps to lower blood cholesterol, which inhibits the development of atherosclerosis.

Persimmon (thanks to naphthoquinones) also has a pronounced sedative effect, causing a decrease in irritability and anxiety ^[9]. The hypnogenic effect of persimmon is manifested in the fact that lovers of this berry fall asleep faster and easier, sleep longer and more soundly, they rarely have spontaneous awakenings. Therefore, the inclusion of persimmons in the diet can potentially help people suffering from insomnia.

A number of scientific works have confirmed the antioxidant properties of persimmon (manifested due to the large number of flavonoids), as well as the antiproliferative effect ^[10,11]. The latter lies in the

fact that due to the suppression of the synthesis of proteins and RNA, cell growth is inhibited, which can potentially become the basis of methods for combating cancer.

Persimmon polyphenols are able to fight a number of mutagens (carcinogenic, radioactive, poisonous substances, etc.) that cause pathological changes in genes and DNA. Also, with the help of persimmons, you can easily and with pleasure restore iodine deficiency.

Recently, of particular interest to physicians is the ability of persimmon to reduce the risk of developing heart disease. In particular, Dr. Shela Gorinshtein called for persimmons to be included in diets designed to prevent the development of atherosclerosis ^[12].

But not only persimmon fruits have a healing effect:

- **The leaf extract** can be included in the effective therapy of atopic dermatitis, a chronic inflammation of the skin caused by a hereditary predisposition to allergies ^[13], as well as protect the skin from ultraviolet radiation ^[14].
- **seed extract** has shown itself well in therapy aimed at preserving kidney function. In addition, it helps to slow down the processes leading to the destruction of red blood cells ^[15].

Use in medicine

Despite the great medicinal potential of persimmon, today relatively few substances released from the fruit have found their use in medicine. So, the seeds of the Caucasian persimmon became the basis for the production of activated carbon. And tannins are mainly used:

- as an astringent antidote for poisoning with salts of mercury, lead, etc., and for diarrhea,
- as a local anti-inflammatory agent,
- as part of antihemorrhoidal drugs.

Surgeons use tannins to treat the skin before operations. However, in industrial production, persimmon has not become the main raw material base for obtaining this substance, which today is isolated mainly from the bark of acacia, chestnut and coniferous trees. But already today on the market you can find dietary supplements, including persimmon.

In 2011, a patent was obtained for a dietary supplement called "Rukhmin", which includes oriental persimmon juice (along with white mulberry juice, grape juice and 10% succinic acid solution). In an experimental study, when studying the pharmaco-biological properties of Rukhmin, its anti-inflammatory activity, a protective function that facilitates the adaptation of the body to adverse factors in extreme conditions, as well as the ability to positively influence liver function, preventing the destruction of cell membranes, were confirmed.

In folk medicine

Persimmon as a medicine and preparations based on various parts of the plant are known in folk medicine in various countries. So, for example :

- In Guatemala, a decoction of the leaves of the local persimmon sapota (known to us as "black apple" or "chocolate persimmon") is used as an antipyretic and astringent. Ground leaves and crushed bark are part of poultices for various skin diseases: ringworm, leprosy (leprosy, which, in addition to the skin, affects the peripheral nervous system), etc.

- In Tajikistan, condensed juice (persimmon-dushob) is taken for anemia and general weakness of the body, and a powder is made from the powder of dried berries, which is used to cleanse the skin of stains.
- In Georgia, where the Caucasian persimmon is still found in natural conditions, fortified tea rich in ascorbic acid (vitamin C) is brewed from small fruits and leaves. And the fruits are actively eaten with early manifestations of toxic goiter (Basedow's disease).
- In Japan, scurvy is treated with persimmon juice, and atherosclerosis is treated with fruit-based folk remedies.
- In Thailand, with the help of persimmons, helminths are expelled.
- In Korea, raw berries are considered an effective anti-inflammatory agent.

In addition, in the modern folk tradition of different countries, the use of persimmon fruits is considered an effective way to treat thyroid diseases, a way to improve the functioning of the digestive tract. Traditional healers recommend unripe fruits as an antidiarrheal remedy. Outwardly, the pulp of ripe berries is prescribed for the rapid healing of wounds.

Often, with the help of persimmons, they struggle with nervous disorders, depression, absent-mindedness. Not without reason, it is believed that the persimmon eaten for breakfast, due to the high content of glucose, increases the efficiency of the brain.

Decoctions and infusions

Traditional medicine recommends using decoctions and infusions of persimmon to enhance the therapeutic effect:

- from chronic diarrhea. 1 ripe berry is cut into slices, which are poured into an enamel bowl and poured with 100 ml of boiling water (the number of fruits and the volume of boiling water can be proportionally increased if necessary). The infusion is kept closed for half an hour. Drink cold, one glass every 4 hours.
- From urinary incontinence. Petioles (legs) of persimmon fruits are crushed, and the resulting raw material (1 tablespoon) is poured with boiling water (200 ml) and boiled for 10 minutes, after which it is infused under the lid for another hour. The drug is taken in 60-70 ml twice a day.
- From hemorrhoids. Daily dried berries (20 g) are poured with warm water (300 ml) and infused for half an hour. The remedy is taken until symptoms are relieved.
- From hiccups. Dry stalks from 1-2 fruits are brewed in 200 ml of water, like tea, which is drunk warm until hiccups stop.
- From hypertension. Ripe persimmon fruit (1 pc.) Is turned into a jelly-like mass with a blender and mixed with finely chopped ginger root (1/4 persimmon volume), lemon juice (4 drops), honey (1 tbsp. L.). The mixture is taken three times a day, 10 ml.

in oriental medicine

In China, Japan, Nepal, northern India and Korea, it has been cultivated and traditionally used for the treatment of various diseases for more than 2 thousand years. Persimmon orientalis is one of the oldest and most popular types of this plant. Its fruits are distinguished by a particularly high content of beta-carotene and vitamin C.

Chinese healers with the help of fresh persimmons treat atherosclerosis, enterocolitis (inflammation of the large and small intestines), diarrhea, fight anemia, and restore the strength of patients after illness. Unripe persimmon fruits are used by healers as an antipyretic, and the juice of such berries is

recommended to lower blood pressure. With the help of a decoction of dried cups, hiccups, "heat" of the stomach, nausea and vomiting were stopped.

Other parts of the plant are also used as the basis for the preparation of medicinal preparations:

- The stems of the fruit were used to relieve coughing fits and treat bronchitis.
- An infusion of the bark of a tree was drunk for dysentery, diarrhea, intermittent fever, in which sharp jumps in temperature are observed (such a fever is typical, for example, for malaria).
- The leaves of the plant were dried, ground into powder, and with its help they stopped bleeding, reduced pressure, and activated the diuretic function. However, it should be borne in mind that persimmon leaves contain substances that have a nerve-paralytic (curare-like) effect, which makes the use of self-prepared healing powders an unsafe procedure.

Also, for medical purposes, Chinese healers used persimmon, the ripening process of which was artificially accelerated (thin bamboo sticks were inserted from the side of the stalk into the berry, which reduced the ripening time, although it led to a loss of taste and / or aroma). Such fruits were prescribed as a sedative (han-shi), with their help they fought fever and the consequences of drinking alcohol.

Another way to enhance the medicinal properties of persimmons was the procedure of contrast drying of the fruits, as a result of which a fermented shi-bin was obtained. The process of preparing the medicine consisted in the fact that the skin was first removed from the persimmon fruits, and then the unprotected pulp was exposed to the sun during the day, and kept in the cold at night. It was believed that due to this, anthelmintic and antihemorrhagic effects were added to the above medicinal properties. In addition, such a persimmon was used as a tonic, expectorant, a drug for healing infected wounds and an antidote in case of wood varnish poisoning.

Strengthening the healing properties of persimmon was carried out with the help of hot air from the fire. Smoky fruits soothed pain, drove out worms, and stopped nausea.

The tradition of using persimmons in healing has also spread to the Middle East. So Ibn Sina (Avicenna) prescribed fresh fruits for emaciated patients for a tonic effect, and he suggested grinding the dried seeds of berries into powder and using them as a cosmetic powder to cleanse the skin.

In Tibetan medicine, where among many characteristics, the "cold" and "warm" properties of products and their division into Yin and Yang groups were taken into account, persimmons were classified as "Yang" (warming, active) products that can balance the Yin beginning and prevent accumulation of mucus and fat, and, accordingly, the development of cardiovascular, oncological diseases, diabetes, etc.

In scientific research

Research groups around the world are studying the effects on the body of both persimmon fruit and some other parts of the plant.

- In this work, scientists determined the ability of tannin-rich coarse dietary fibers of young persimmon (oriental) to bind bile acids. In a pilot study, people were divided into 3 groups. One was given just "empty" cookies (placebo), while the other two groups were given 3 and 5 grams of persimmon dietary fiber, respectively, in the cookies. Participants in the experiment had to eat this supplement three times a day before the main meal for 12 weeks. As a result, after the experiment, the level of the so-called. "bad" low-density cholesterol. At the same time,

the level of triglycerides and high-density cholesterol in the blood plasma did not change. This gave reason to use persimmon in the clinical treatment of hypercholesterolemia ^[16].

- In an experiment on laboratory rats, 6-week-old females were divided into 3 groups: with a standard diet, with the addition of young persimmons to the standard diet, and with the addition of mature persimmons. The experiment lasted 4 weeks, during which the animals received persimmon powder from frozen dried fruit. As a result, it was found that in rats eating young persimmon, the level of phospholipid hydroperoxides in plasma fell more than in others, which inhibited the development of atherosclerosis. Mature persimmon also showed a decrease in hydroperoxides, but to a slightly lesser extent. ^[17].
- Persimmon leaf extract helps with hyperglycemia, hyperlipidemia and fatty liver in type 2 diabetes. This was established in an experiment on mice, which were supplemented with a powdered leaf extract for 5 weeks to a standard diet. The rodents had lower levels of glucose, triglycerides, and total cholesterol (although there was more "good" high-density cholesterol). The weight of the liver also decreased due to a decrease in the weight of fat ^[18].
- In 2002, a study in mice showed that oral administration of persimmon leaf extract had both preventive and curative effects in atopic dermatitis, helping with allergic rashes ^[19].
- Persimmon (Oriental) phenolic compound extract helps soothe the pain of colitis. To prove this, mice with colitis were given an extract, after which they had a decrease in intestinal inflammation, which was manifested in the reduction of diarrhea, getting rid of external injuries (for example, ulcers). In addition, it was found that the extract prevented the development of cancer cells in rectal cancer ^[20].
- In an in vitro study, Chinese scientists found that 50mg/mL of persimmon extract provided high protection against DNA damage. Carotenoids and flavonoids contained in persimmons (as natural antioxidants) along with anthocyanins and polyphenols reduced the risk of DNA damage. In humans, this can prevent accelerated aging, as well as the development of neurodegenerative diseases and cancer ^[21].

Weight regulation

Those who want to lose extra pounds make persimmons the basis of unloading diets, in which from one and a half to two kilograms of fruit are eaten per day. On such programs, persimmons are sometimes "diluted" with black bread and tea without sugar.

However, nutritionists advise excluding persimmons from active weight loss programs for obesity. Persimmon per 100 grams of the product contains approximately 70 kcal (in some varieties, this figure is at the level of 120-130 kcal). Although this berry is not the champion in calories among fruits exotic for our country (for example, a banana has about 90 kcal, and a date has about 280 kcal in general), it contains a lot of sugar, because of which it is also removed from the diet with sugar diabetes.

The problem also lies in the fact that with an extreme mono-diet "on persimmon" the risks of harming health far outweigh the potential benefits. Persimmon in volumes of 1.5-2 kg per day can create serious problems with the gastrointestinal tract: from the formation of clots of plant fibers in the stomach (bezoar stones) to acute intestinal obstruction and constipation. We should not forget about allergic reactions. Therefore, nutritionists recommend eating no more than 2-3 medium-sized fruits (or one large fruit) per day. Moreover, it is more useful to do this at the moment of changing biological rhythms (for most people, the time is about 16 hours). And diets for weight loss are best based on other products.

In cooking

Ripe persimmon goes well with cottage cheese, yogurt, kefir and other fermented milk products and badly with milk. Often, persimmons are generally recommended to be separated from the main meal, with pauses of 0.5 hours before and / or 1.5-2 hours after eating.

In the product compatibility tables of the famous American naturopath Herbert Shelton (whose separate nutrition theory, however, is actively criticized by many nutritionists), persimmon is included in group No. 1 ("Sweet fruits"). According to the theory, products from this group are perfectly combined with each other, with representatives of group No. 2 ("Semi-acidic fruits"), with sour-milk products. Shelton allows a combination of sweet fruits with nuts, vegetables, herbs.

Gastronomic and culinary preferences for persimmons are shown in contrast: some chefs like to fry it, while others believe that this can "kill" the product. Similar conflicting opinions are expressed about the marinade.

In Georgia, persimmon belongs to the category of desserts, and in the kitchen they use it both raw and dried. Local vodka is made from persimmon, which is then often "snacked" with persimmon. Very often this fruit is served with cheeses (guda sheep cheese, smoked sulguni, chanakh and tenil cheeses). Similarly, persimmons are combined with cheeses in Armenian cuisine.

Traditionally, persimmon is not added to hot Georgian dishes, but modern chefs successfully combine this berry with baked lamb, stewed pork. In Armenian cuisine, the combination of sweet persimmon with meat, with spicy and sour foods is considered traditional. Persimmon sauce with garlic, ginger, cilantro perfectly complements the taste of beef and lamb. Chefs representing the cuisines of different peoples of the world call persimmon with dried and baked duck an ideal pair.

In cosmetology

Persimmon is widely used in folk cosmetology, where it becomes the basis of natural nourishing creams, lotions for oily skin, anti-cellulite body masks. Here are some examples of solving cosmetic problems with persimmons at home.

- **Lotion for dry skin.** The juice of one freshly squeezed ripe fruit is filtered and mixed with olive oil (0.5 tsp) and still mineral water (100 ml). The ingredients are mixed and applied to the skin of the face and neck for about a quarter of an hour. The lotion is washed off with warm water.
- **Mask for dry skin.** Butter (1 tbsp), yolk of one egg and honey (1 tsp) are added to the pulp of a ripe fruit, ground in mashed potatoes. All this is mixed, and the mass, brought to a state of uniformity, is applied to the face for half an hour. After the procedure, the mask is removed with a paper towel.
- **The mask is complex nourishing and moisturizing.** Half of the persimmon fruit is mixed with the protein of one egg, milk (1 tablespoon), liquid honey, aloe juice and glycerin (1 teaspoon each). The duration of the procedure is 20-30 minutes.
- **Cleansing lotion.** The pulp of one fruit is poured with vodka (200 ml) and lemon juice (1 tsp), corked and infused for a week in a dark place. A paper napkin is impregnated with this lotion, which is applied to the face for 10-15 minutes.
- **Lotion for oily skin.** Persimmon juice (1 tablespoon), cologne and camphor alcohol (100 ml each) are added to the beaten egg white. This mixture should be wiped on the face before going to bed.
- **Anti-cellulite composition.** The pulp of one fruit is mixed with sea salt (1.5 tablespoons), lemon and orange juice (1 tablespoon each). Mixed to a homogeneous mass, the composition is rubbed into the steamed body in the areas of cellulite formation. After the procedure, you should take a contrast shower.

A number of cosmetology organizations produce products based on persimmons on an industrial scale. For example, the South Korean company Missha produces a sunscreen with persimmon, Belarusian manufacturers under the Tselebnaya Banka trademark offer face creams and masks in which argan oil is added to persimmon, and the Organic Kitchen brand (Russia) presented a moisturizing foot cream with fresh Hawaiian oil. persimmon and mulberry.

Dangerous properties of persimmon and contraindications

The high concentration of tannin in persimmons (which is especially characteristic of unripe fruits) and a large amount of plant fibers make this berry dangerous for people with adhesive bowel disease and people who have undergone abdominal surgery in the recent past. Since tannic acids (partially preserved even in mature fruits) reduce the secretion of the small intestine and impair peristalsis even in healthy people, children with constipation should not be given persimmon in any form ^[22]. Due to the abundance of sugars, persimmon is also contraindicated for diabetics.

The astringent tannic properties of tannins, combined with the abundance of fiber in persimmons, can potentially threaten the appearance of a bezoar stone in the digestive organs, formed from plant fibers rolled into a lump, and, as a result, to ulcerative formations. Despite the fact that phytobezoar in humans is a rare phenomenon (until the beginning of the 90s of the 20th century, several hundred cases of the formation of bezoar stones of various origins were described in the literature), and people generally rarely choose unripe fruits for food, the risks of encountering this problem due to consumption of persimmons is relatively small, although they persist.

Thus, there is evidence of the formation of phytobezoars during long-term use of persimmon in both children ^[23] and adults ^[24]. In addition, a large amount of persimmon eaten in a short period of time can lead to the formation of a bezoar stone. In 2017, the media reported on a Muscovite whose stomach formed a lump of fibers the size of a fist after eating one and a half kilograms of fruit. Doctors emphasize that women over 40 are at risk, in whose body, due to a decrease in the amount of estrogen, less digestive enzymes are produced.

Another threat from the use of persimmons is associated with the presence of iodine in the berries, with excessive intake of which into the body (for example, during self-medication and an overdose of iodine-containing drugs), chronic inflammation and hyperfunction of the thyroid gland can occur. An excess of iodine is more dangerous than its lack, however, in our country, iodine deficiency is more common, which especially affects women during pregnancy and children.

Selection and storage

The choice of a ripe and sweet berry is an algorithm in which the persimmon variety plays a decisive role. Signs of a ripe persimmon are usually considered soft sides of the fruit and a dry stalk, and in most cases this is true. The fruits of those varieties that are most often on our market gain sweetness and lose their tannic viscosity when they ripen; maturity is determined, first of all, by the soft sides, indicating a jelly-like consistency of the pulp.

But this rule does not apply to all varieties. Many of them can be both firm (crunchy like an apple), non-astringent and very sweet. And the more assortment of varieties in the store, the more difficult it is for the buyer to figure it out.

In addition, in the varietal division of persimmon berries, there is one feature due to which the fruits (according to the classification adopted in the West) are divided into two groups:

1. Group of constant varieties.

This includes those plants whose fruits do not change the color of the pulp, regardless of whether pollination and seed formation have occurred or not. In turn, the varieties of this group include two subgroups:

- tart (for example, "Hachiya", "Saijo", "Yemon", "Nikitskaya burgundy", "John Rick", etc.),
- sweet (for example, "Sharon", "Jiro", Fuyu, "Nakhodka", "XX century", "Mishirazu", etc.).

2. A group of varying varieties.

It contains those varieties that change the color of the pulp and consumer qualities depending on the presence of pollination (the method of fertilization). The berries of the varieties of this group, formed parthenocarpically (without pollination and seed formation), when ripe, do not change the color of the pulp and retain astringency longer, losing it only when the pulp becomes already jelly-like. However, if the same plant has been pollinated, the flesh color of the berries will darken as they ripen, and the astringency will become less pronounced by the time of harvest.

This group includes king (chocolate) varieties, for example : "Zenji-Maru", in fact, "King" (as we usually call the Japanese variety "Hiakume").

From this we can conclude that when choosing a persimmon, first of all, you need to find out which variety the seller offers.

- Widely presented on the market since October, the **Azerbaijani king variety** with characteristic cracked patterns on the top, usually gets on the counter already soft to the touch, juicy (ready to burst from pressing) with almost non-astringent pulp. Although the "female" kinglets, recognizable by the slight darkening at the "nose" (in the center of the fruit at the bottom), can sometimes knit, the "male" kinglet fruits, which are distinguished by round stains around the "nose", almost never knit. Such a persimmon has a bright orange skin and dark "chocolate" flesh.
- **Spanish persimmons** can be found almost all year round in supermarkets. This large, glossy berry typically has firm flanks but non-astringent, sweet flesh. The peel has a rich orange-yellow color. Availability throughout the year is due to the cultivation of this persimmon on an industrial scale in greenhouses.
- **Variety "Sharon"** - a product of Israeli selection, belonging to the group of constant varieties, has also recently begun to appear on the shelves often. This persimmon is characterized by the presence of sweet hard pulp without stones and viscosity.

If there are problems with determining the variety of persimmon, the seller's recommendations come to the rescue, testing the taste of the berry directly at the counter or experiment - buying a trial small amount of persimmon. At the same time, even if a persimmon with a high content of tannins comes across when choosing, this can be corrected by simply holding the fruits for several hours in the freezer - the tannins will stop knitting, and the pulp will become candied.

You can speed up ripening and improve the taste of fruits without a refrigerator by putting them in a paper bag (cardboard box) along with bananas (for about a day). You can also put persimmons next to ethylene-emitting apples. To eliminate the astringent taste, it is sometimes recommended to hold the berries in warm water for half a day, but this is less convenient, since you will have to constantly maintain the temperature of the cooling water at 30-40 °C. Another, but not the most popular, method of ripening (bringing to consumer ripeness) - keeping fruits in a 10% solution of lime.

You can not do without a refrigerator for long-term storage of already ripe persimmons. For 3 months, such fruits can be placed in a refrigerator compartment with a temperature of -1°C to 0 °C and an

adjustable humidity of 80-90%. At a lower humidity, the fruits will begin to dry out, and at a higher humidity, they will become moldy. For longer periods (up to six months), persimmons are frozen using extreme temperatures ("quick freeze" mode), however, it must be borne in mind that when defrosted, the pulp will lose its density, turning into gruel.

Varieties and cultivation

Persimmon is cultivated not only in the Indomalayan zone, but also in a number of European countries (for example, in Britain - from the first half of the 17th century), in America, Africa, Australia, Japan, and some species are found only in one region and do not grow anywhere else. In general, there are more than seven hundred species of plants of this genus in the world, although no more than two hundred are widespread.

Persimmons are also grown here, choosing frost-resistant species for this: Virgin (*Diospyros virginiana*), Eastern (*Diospyros kaki*), Caucasian (*Diospyros lotus*). The first of them (with frost resistance up to -30 C) is most often used as a stock. The tap root system of this species goes deep into the ground, somewhat reminiscent of carrots. The plant is planted in a place protected from the wind, on the south sunny side. Persimmon is not demanding on soils, but when planting at the bottom of the pit, a layer of fertile soil should be poured. In the northern regions, trees are planted in the spring, and in the south - it is possible in the fall.

Persimmon fruits are removed slightly unripe, as a rule, in early October, and then they are ripened for about another half month. But if you remove the berries later, after the first frost, they will only become tastier.

If the traditional types of persimmon in our country have recently ceased to be something unusual, then rare exotic fruits can still surprise the European consumer:

- **Velvet persimmon (mabolo).** This originally Filipino persimmon is now cultivated throughout Southeast Asia, as well as Cuba, Jamaica and some other Caribbean islands. Malobo is called a "velvet apple" because it resembles the fruits of an apple tree in size and external characteristics, but at the same time the skin is covered with small hairs that can irritate the mucous membrane, therefore, before eating, the skin (which also has an unpleasant pungent odor) is removed. "Velvet persimmon" can reach 10 cm in diameter. The fruits change color as they ripen, going from light green to bright red and purple. The sweet and sour taste of mabolo is reminiscent of a mixture of apple and banana.
- **Sapota ("black apple", "chocolate persimmon").** This species is native to Guatemala and the lowlands of southern Mexico. The Aztecs called their persimmon "totolcuitlatzaputl" and enjoyed eating the sweet fruits of the plant. The fresh ripe flesh tastes like chocolate pudding, which led to the appearance of another alternative name for the species. The berry is spherical, 5-12 cm in diameter. As it matures, the skin changes from a shiny bright green to brown-green and then dirty green. The flesh at the same time darkens, becoming dark brown, almost black.
- **Caucasian persimmon.** Unlike previous species, this persimmon cannot boast of the size of the fruit - its yellow berries do not exceed 2-3 cm in diameter (usually 1-2 cm). But they are very sweet and juicy. The first frosts relieve the pulp from astringency. Also, tannins are removed from the fruit by drying. Despite the geographical indication in the name, this type of persimmon is distributed from Japan to Spain, it is also cultivated in America and North Africa.

If you simply list all the therapeutic effects that appear when using persimmon, you get a long list that allows you to argue that persimmon is an antitumor, hypnogenic, sedative product that can improve

skin condition, vision, the functioning of the cardiovascular system and, despite some limitations, with a reasonable approach to normalize the work of the digestive tract.

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Persimmon - useful properties, composition and contraindications

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Abstract. The article discusses the main properties of persimmon and its effect on the human body. A systematic review of modern specialized literature and relevant scientific data was carried out. The chemical composition and nutritional value of the fruit are indicated, the use of persimmon in various types of medicine and the effectiveness of its use in various diseases are considered. The potentially adverse effects of persimmon on the human body under certain medical conditions and diseases are analyzed separately. Considered scientific basics diets With her application.